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Innovations in census methodology and technology, and results of testing**Update on Progress Towards an Admin Data Census****Note by the Office for National Statistics, United Kingdom¹***Summary*

At the Office for National Statistics (ONS), it is our ambition to produce the type of information that is collected by a 10-yearly census (on housing, households and people) from an Administrative Data Census using a combination of administrative data and surveys. Our second assessment of our progress towards an Administrative Data Census reflects an important step forward in the ONS being able to access the range of data needed to produce Admin Data Census outputs. The Digital Economy Act 2017 was passed into law in April 2017.

Over the last year, we've done a lot of ground work to enable us to achieve our expected assessment post 2021. This paper describes the progress that has been made, including the publication of new estimates on the number of occupied addresses ('households') and estimates of personal income direct from administrative data sources and early work to identify new administrative sources that might be available to enable the production of census-type outputs about population and household characteristics.

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I. Introduction

1. In March 2014, the National Statistician made a recommendation that the census in 2021 should be predominantly online, making increased use of administrative data and surveys to both enhance the statistics from the 2021 Census and improve statistics between censuses. The government's response to this recommendation was an ambition that "censuses after 2021 will be conducted using other sources of data". A move towards an Administrative Data Census is our response to this challenge.

2. An Administrative Data Census offers a number of opportunities. These include producing key census outputs on a more timely, frequent basis (possibly every year), for less money than the current system. It also offers opportunities to produce new census outputs that aren't available through the current approach, such as income, fuel poverty and housing affordability. This will result in better decision-making across government in line with UK Statistics Authority strategy – Better Statistics, Better Decisions.

II. 2017 annual assessment of ONS's progress towards an Administrative Data Census – key points

3. This year's assessment reflects an important step forward in the Office for National Statistics (ONS) being able to access the range of data needed to produce Administrative Data Census outputs. The Digital Economy Act 2017 was passed into law in April 2017. The Act gives ONS a right of access to information held by government departments, other public bodies, charities and large and medium-sized businesses, for statistics and research purposes.

4. Over the last year, we've done a lot of ground work to enable us to achieve our expected assessment post 2021 (see Figure 1). As well as the Digital Economy Act 2017, progress has been made in:

- improving the accuracy of administrative data based population estimates through improved linking, use of new data sources and improved methodology; these population estimates are now closer to our official estimates
- producing new estimates on the number of occupied addresses ("households") and estimates of personal income direct from administrative data sources
- identifying potential administrative sources and starting to describe methods which will enable us to produce estimates of population and household characteristics using these sources in combination with survey and other data

5. Our plans for the next year build on this ground work. They continue to demonstrate the potential for an Administrative Data Census to produce outputs that meet information needs. This will involve working with data suppliers to access data sources through the new powers of the Digital Economy Act 2017. The Act will enable us to make progress against the other high-level criteria over the coming years. This progress is reflected in the "expected progress by 2018" indicator in the main assessment as shown in Figure 1.

Figure 1. Overall assessment against five high level criteria

Evaluation Criteria		2016 Assessment	Progress made since 2016	2017 Assessment	Expected progress by 2018	Expected assessment by 2023
Access to data						
Ability to link						
Ability to meet information needs of users	Population estimates					
	Household and families estimates					
	Population and household characteristics					
	Housing characteristics					
Acceptability to stakeholders						
Value for money						



Notes – The expected progress by 2023 has not changed since last year

6. In particular, we’ll be working within the legally operational framework of the Digital Economy Act 2017 to:

- access more “activity”² data, which will be used in combination with a coverage survey to improve the quality of population estimates

² Information from administrative data sources about when individuals have interacted with systems or services, such as the National Insurance, tax or benefit systems, or a hospital visit through the NHS system.

- access a wider range of data covering population characteristics and use it to increasingly demonstrate the range of outputs that are possible through an Administrative Data Census
7. Together with accessing data sources, we will develop new methods to enable the production of small area multivariate³ outputs about population characteristics.

IV. What's changed since the 2016 assessment?

8. In our previous report, the focus of our assessment was whether ONS would be able to move to an Administrative Data Census post-2021. We described the goal of comparing outputs based on administrative data and targeted surveys against the 2021 Census.
9. We have now developed our plans for this comparison in more detail.
10. To make this comparison as fair and robust as possible, we will need to produce the best possible Administrative Data Census outputs in 2021. We plan to have the following in place by 2021:

a. Administrative Data Census-based population statistics by 2020

An Administrative Data Census-based approach to producing population statistics using a combination of administrative data and a population coverage survey will need to be in place in 2020 to demonstrate the ability to produce:

- annual estimates of the size of the usual resident population by age and sex for national, local and small areas
- components of population change (births, deaths and migration)

These estimates provide a base for further outputs about the population including population projections.

The annual Population Coverage Survey (PCS) would measure and adjust for coverage errors in the Statistical Population Dataset (SPD) as shown in the framework in Figure 2. We are developing plans to test a PCS, to commence later in 2017. In the next 3 years, we plan to implement a comprehensive testing strategy to explore appropriate sampling and data collection methods, response rates and estimation methodologies

Earlier this year, we produced a first set of research outputs on the numbers of occupied addresses ("households"). These were produced from the same resident population base as that used for Administrative Data Census Outputs on the size of the population.

b. An Administrative Data Census producing characteristics of the population, housing and households by 2021, supported by an integrated approach to collecting survey information on characteristics of the population

This approach will need methods that make best use of a combination of administrative, survey and commercial data to produce outputs about household and population characteristics. A range of methods may be needed, depending on the availability and quality of these sources. Some topics will

³ Cross tabulated outputs using more than one variable, for example unemployment rates by ethnic group for small areas.

be predominantly administrative data-based, others will be based on survey information alone. We expect that for most characteristics we will need to integrate both administrative and survey sources, with support from commercial data in some cases.

For census topics for which there is limited or no administrative data available, such as the number of hours of unpaid care, outputs would be largely based on a sample survey. Outputs for these topics may be more limited in frequency and/or detail. For example for such topics, it might be possible to produce estimates only at Local Authority level. We are currently investigating how such a survey might fit alongside other ONS surveys.

- The systems, services and technologies in place to support this transformation.
- We are exploring how best to make use of new corporate platforms for the acquisition, management, integration, processing, and analysis of data from multiple sources.
- We're in the early stages of development for a range of new technologies to support the transition to an Administrative Data Census including:
 - online collection of census and survey data
 - acquisition and validation of administrative data directly from suppliers
 - matching services for an address and business "spine" and for data about people
 - access control and data management

11. Future assessments will measure our progress towards achieving these objectives. The final assessment (due in spring 2023) will form the basis for the National Statistician's recommendation at the end of 2023, about the future of the census and population statistics. A public consultation will take place on the basis of our final assessment and to ensure the National Statistician's recommendation reflects user needs.

12. 10. The full report of our annual assessment can be found here: <https://www.ons.gov.uk/census/censustransformationprogramme/administrativedatacensusproject/administrativedatacensusannualassessments>